

**THAT WHICH IS CLAIMED IS:**

1. An apparatus to inject steam into a hydrocarbon effluent passing through a TLE cone of a hydrocarbon cracking furnace, said apparatus comprising:
  - (a) at least one injection probe, which is connected at an angle in a range of about 30 to  
5       about 60 degrees to said TLE cone; and
  - (b) a distribution nozzle, which is connected to said end of said injection probe,  
      wherein said injection probe and distribution nozzle protrude into said TLE cone by  
      a distance in the range of about 1% to about 10% of the radius of the TLE cone.
2. An apparatus as recited in claim 1 wherein said angle is about 45 degrees.
- 10   3. An apparatus as recited in claim 2 wherein there are six injection probes located 60  
      degrees apart around the circumference of said TLE cone.
4. An apparatus as recited in claim 1 whereby said injection probe and distribution nozzle  
      protrude into said TLE cone by a distance of about 1% to about 3% of the radius of the  
      TLE cone.
- 15   5. An apparatus as recited in claim 1 wherein said injection probe is located at a distance  
      from the TLE tubesheet in a range of about 12 to about 36 inches.
6. A method to inject steam in a hydrocarbon effluent passing through the TLE cone of a  
      hydrocarbon cracking furnace to reduce formation of a coke material on the TLE  
      exchanger tubesheet, the method comprising:  
20       injecting steam through at least one injection probe wherein said injecting is  
      accomplished by said apparatus in claim 1.
7. A method of injecting steam as recited in claim 6 wherein the steam pressure is in a  
      range of about 30 psig to about 150 psig.

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